IN THE CLAIMS

Please cancel Claims 1-10 without prejudice.

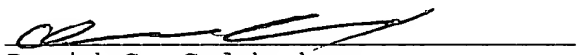
Please add Claims 11-17 contained on the attached claim replacement sheets.

REMARKS

Entry of the foregoing amendments prior to issuance of the first Office Action is respectfully solicited. These amendments are intended to place the application in better form for consideration by the Examiner.

Pursuant to 37 CFR § 1.121, marked up sheets showing the proposed changes to the specification and replacement sheets with those changes entered are enclosed. Also pursuant to the above rule, the new claims are presented on replacement sheets.

Respectfully submitted,



DSG/kc

David S. Goldenberg

FLYNN, THIEL, BOUTELL & TANIS, P.C.
2026 Rambling Road
Kalamazoo, MI 49008-1699
Phone: (616) 381-1156
Fax: (616) 381-5465

Dale H. Thiel Reg. No. 24 323
David G. Boutell Reg. No. 25 072
Ronald J. Tanis Reg. No. 22 724
Terryence F. Chapman Reg. No. 32 549
Mark L. Maki Reg. No. 36 589
David S. Goldenberg Reg. No. 31 257
Sidney B. Williams, Jr. Reg. No. 24 949
Liane L. Churney Reg. No. 40 694
Brian R. Tumm Reg. No. 36 328

Encl: Marked Up Specification Pages 2, 2a and 7
Substitute Specification Pages 2, 2a and 7
Claim Replacement Sheets, Pages 1 and 2

336.9804

cinity data carriers are suitable. For example, an electronically rechargeable subway ticket can be readily designed for data transfer to the terminal according to the "touch and go" principle, i.e. as a close coupling or proximity data carrier, while such data carriers are unsuitable, or in any case extremely awkward, for access control systems at ski lifts, for example, since the lift card can be e.g. fastened to the clothing or the data carrier integrated into a wristwatch.

The carrier frequency for data transfer, the permissible frequency bandwidth and the transmitting energy emitted by the terminal for contactless data transfer between data carriers and terminals are governed by regulations. For example, an ISO standard stipulates a carrier frequency of 13.56 MHz, whereby only a low given frequency bandwidth is permissible.

In order to solve the problem of different data transfer distances for multifunctional data carriers, one might consider increasing the emitted transmitting energy so that the vicinity data transfer distance holds for all applications. However, the maximum transmitting energy is likewise limited officially for physiological and other reasons. Also, data protection provisions oppose a vicinity data transfer distance in some applications of such a multifunctional data carrier.

WO 98/10364 discloses a method for identifying smart cards in order to let only one certain smart card from a group of similar cards communicate with a terminal. It is also known to operate terminals with lower power in economy operation (e.g. WO 98/01816).

US-A-4 411 004 discloses, in a transmitter connected with a plurality of receivers via a cable, performing data transfer at different transfer rates, i.e. using a higher data transfer rate for a receiver at a small distance from the transmitter than for a receiver at a large distance therefrom.

The problem of the invention is to provide a method which permits one and the same data carrier to be used for applications with both small and large data transfer distances.

This is obtained according to the invention by ~~varying the data transfer rate~~the method stated in claim 1.

According to the invention the rate of data transfer is varied in accordance with the distance of data transfer to be bridged.

The higher the data transfer distance is, the higher the transmitting energy emitted by the terminal must be. As

With the use of the inventive data carrier, i.e. data carriers communicating at different data transfer rates in accordance with the data transfer distance, and with the use of the inventive terminal, i.e. a terminal which is controllable for varying its transmitting power in accordance with the data transfer rate, the inventive method permits adaptation of the data transfer rate to the data transfer distance to be bridged so that the highest possible data transfer rate can be obtained at a given data transfer distance while heeding the relevant regulations.

The transmitting power of the terminal corresponding to the data transfer rate ~~can be~~is varied ~~continuously or~~in steps. It is possible for example to switch over the transmitting power of the terminal in only two steps, i.e. for a small, for example proximity, data transfer distance and for a large, for example vicinity, data transfer distance.

The data carrier can be designed in different ways, for example as a card, wristwatch, bracelet or key pendant.

The invention will be explained in more detail by way of example below with reference to the enclosed drawings, in which:

Fig. 1 shows a diagram rendering maximum transmitting power of the terminal as a function of frequency bandwidth,

Fig. 2 shows schematically the representation of the combination consisting of the inventive data carrier and inventive terminal.

Fig. 1 shows the maximum permissible transmitting power of the terminal and the maximum permissible frequency bandwidth at a certain carrier frequency by curve A rendered with unbroken lines. While a low frequency bandwidth occurs at a low data transfer rate according to dashed line B and thus the maximum permissible transmitting power of the terminal, i.e. a large data transfer distance, is possible, the frequency bandwidth is considerably greater at a high data transfer rate according to dotted line C and thus only low

cinity data carriers are suitable. For example, an electronically rechargeable subway ticket can be readily designed for data transfer to the terminal according to the "touch and go" principle, i.e. as a close coupling or proximity data carrier, while such data carriers are unsuitable, or in any case extremely awkward, for access control systems at ski lifts, for example, since the lift card can be e.g. fastened to the clothing or the data carrier integrated into a wristwatch.

The carrier frequency for data transfer, the permissible frequency bandwidth and the transmitting energy emitted by the terminal for contactless data transfer between data carriers and terminals are governed by regulations. For example, an ISO standard stipulates a carrier frequency of 13.56 MHz, whereby only a low given frequency bandwidth is permissible.

In order to solve the problem of different data transfer distances for multifunctional data carriers, one might consider increasing the emitted transmitting energy so that the vicinity data transfer distance holds for all applications. However, the maximum transmitting energy is likewise limited officially for physiological and other reasons. Also, data protection provisions oppose a vicinity data transfer distance in some applications of such a multifunctional data carrier.

WO 98/10364 discloses a method for identifying smart cards in order to let only one certain smart card from a group of similar cards communicate with a terminal. It is also known to operate terminals with lower power in economy operation (e.g. WO 98/01816).

US-A-4 411 004 discloses, in a transmitter connected with a plurality of receivers via a cable, performing data transfer at different transfer rates, i.e. using a higher data transfer rate for a receiver at a small distance from the transmitter than for a receiver at a large distance therefrom.

The problem of the invention is to provide a method which permits one and the same data carrier to be used for applications with both small and large data transfer distances.

This is obtained according to the invention by the method stated in claim 1.

According to the invention the rate of data transfer is varied in accordance with the distance of data transfer to be bridged.

The higher the data transfer distance is, the higher the transmitting energy emitted by the terminal must be. As

With the use of the inventive data carrier, i.e. data carriers communicating at different data transfer rates in accordance with the data transfer distance, and with the use of the inventive terminal, i.e. a terminal which is controllable for varying its transmitting power in accordance with the data transfer rate, the inventive method permits adaptation of the data transfer rate to the data transfer distance to be bridged so that the highest possible data transfer rate can be obtained at a given data transfer distance while heeding the relevant regulations.

The transmitting power of the terminal corresponding to the data transfer rate is varied in steps. It is possible for example to switch over the transmitting power of the terminal in only two steps, i.e. for a small, for example proximity, data transfer distance and for a large, for example vicinity, data transfer distance.

The data carrier can be designed in different ways, for example as a card, wristwatch, bracelet or key pendant.

The invention will be explained in more detail by way of example below with reference to the enclosed drawings, in which:

Fig. 1 shows a diagram rendering maximum transmitting power of the terminal as a function of frequency bandwidth,

Fig. 2 shows schematically the representation of the combination consisting of the inventive data carrier and inventive terminal.

Fig. 1 shows the maximum permissible transmitting power of the terminal and the maximum permissible frequency bandwidth at a certain carrier frequency by curve A rendered with unbroken lines. While a low frequency bandwidth occurs at a low data transfer rate according to dashed line B and thus the maximum permissible transmitting power of the terminal, i.e. a large data transfer distance, is possible, the frequency bandwidth is considerably greater at a high data transfer rate according to dotted line C and thus only low